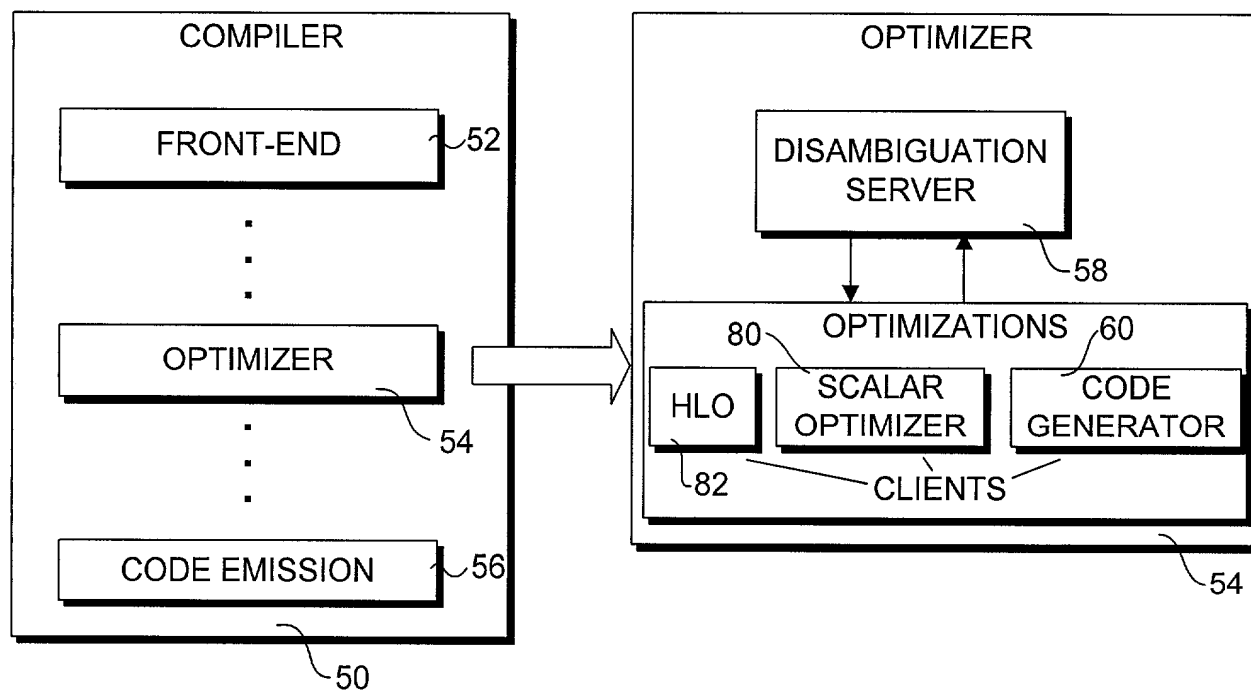
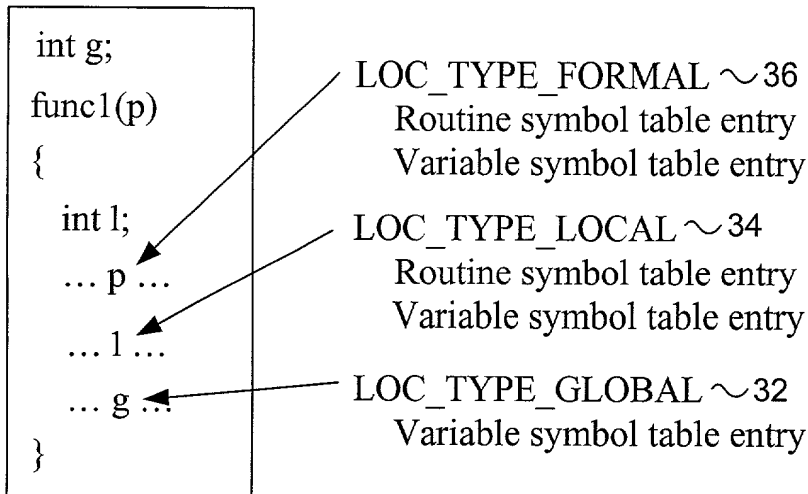


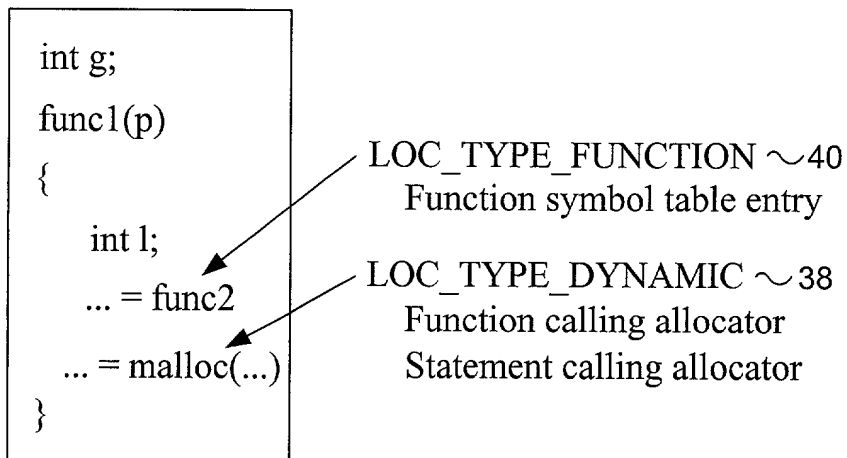
**FIG. 1**



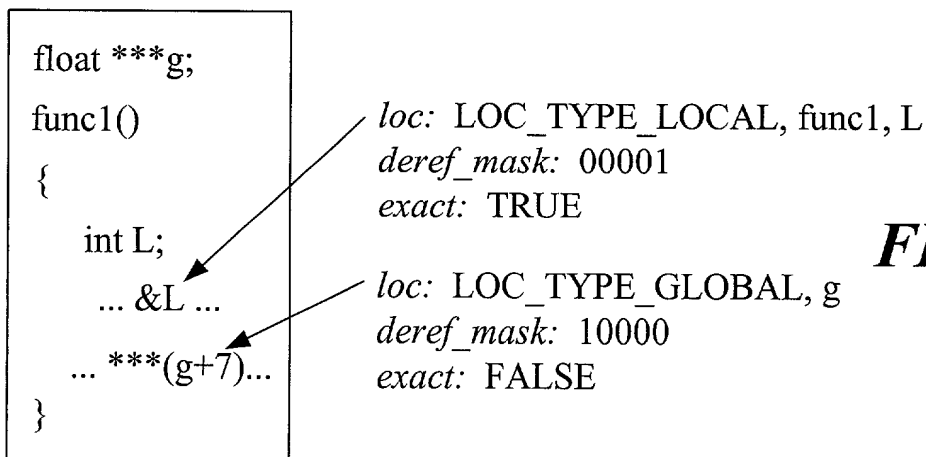
**FIG. 5**



**FIG. 2A**



**FIG. 2B**



**FIG. 2C**

```
struct {int field1, int field2} node;
```

```
Intermediate Language  
Memory Reference  
load or store  
node.field1
```

# Direct Reference

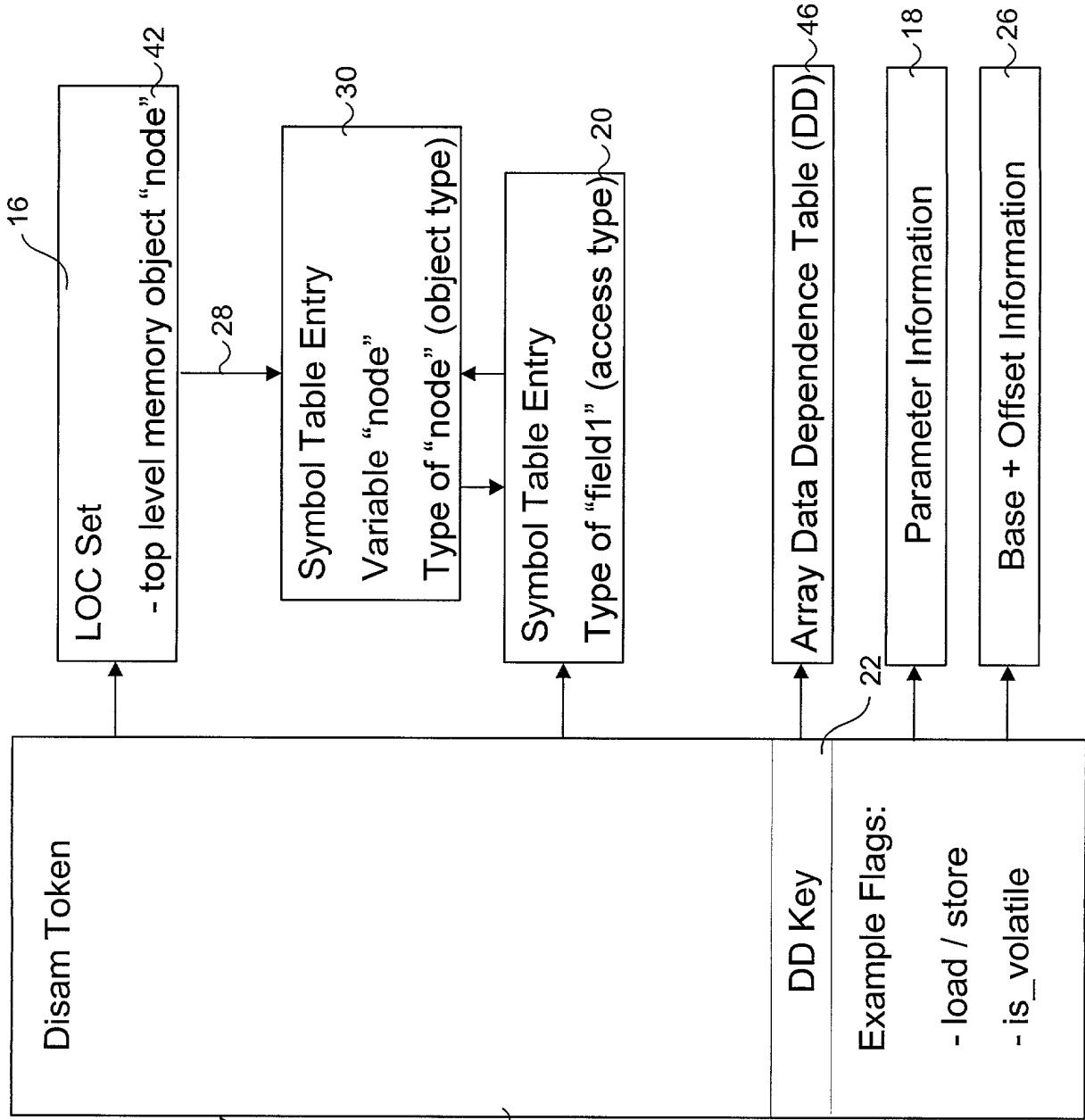


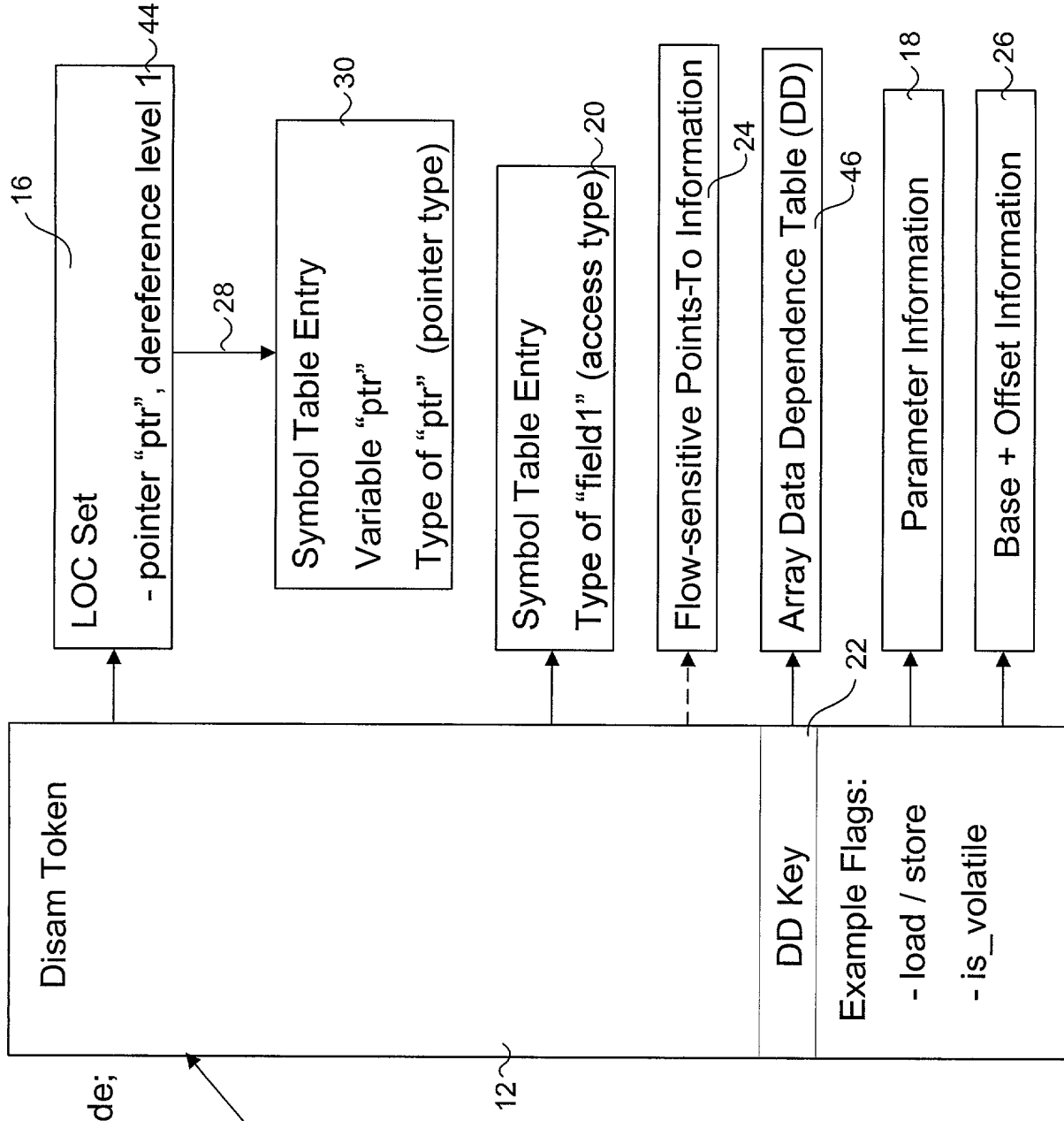
FIG. 3

FIG. 4 is a block diagram of an indirect reference structure. The structure is a Disam Token (12) that contains a LOC Set (16), a Symbol Table Entry (30), a Symbol Table Entry (20), Flow-sensitive Points-To Information (24), an Array Data Dependence Table (DD) (46), Parameter Information (18), and Base + Offset Information (26). The LOC Set (16) is a pointer "ptr", dereference level 1 (44). The Symbol Table Entry (30) is a Variable "ptr" of type "ptr" (pointer type). The Symbol Table Entry (20) is of type "field1" (access type). The Array Data Dependence Table (DD) (46) is a DD Key (22) with Example Flags: - load / store, - is\_volatile. The Parameter Information (18) is Parameter Information. The Base + Offset Information (26) is Base + Offset Information. The structure is used for an Intermediate Language Memory Reference load or store (43) with the code: ptr->field1 or (\*ptr).field1. The structure is used for a struct {int field1, int field2} node;.

struct {int field1, int field2} node;

Intermediate Language  
Memory Reference  
load or store  
ptr->field1 or (\*ptr).field1

## Indirect Reference



**FIG. 4**

FIG. 6 is a block diagram of a Disambiguation Server 68. The server is shown as a dashed box containing several components. At the top left is the 'BASE + OFFSET ANALYSIS' block 68. Below it is the 'FLOW-SENSITIVE POINTS-TO' block 70. To the right of 70 is the 'FLOW-INSENSITIVE POINTS-TO' block 66. Below 66 is the 'ARRAY DATA DEPENDENCE TABLE' block 64. To the right of 64 is the 'DISAMBIGUATOR' block 62. Above 62 is the 'SYMBOL TABLE' block 76. To the right of 76 is the 'SCHEDULERS LOCAL, GLOBAL, PIPELINER' block 78. Below 78 is the 'SCALAR OPTIMIZER CLIENTS PRE, PDSE, DCE' block 80. To the right of 80 is the 'HLO CLIENTS' block 82. The server is connected to several external components: 'PARAMETER COPY AND MODIFICATION ANALYSIS' block 72, 'FUNCTION CALL MOD/REF' block 74, and 'SCHEDULERS LOCAL, GLOBAL, PIPELINER' block 78. The server also has a 'LEGEND' block 58 at the bottom right. The legend defines the tokens used in the diagram: T: DISAM TOKEN, R: DISAM RESULT, L: LOC SET, S: SYMBOL TABLE OBJECT, E: EXPRESSION, B: BASE, O: OFFSET.

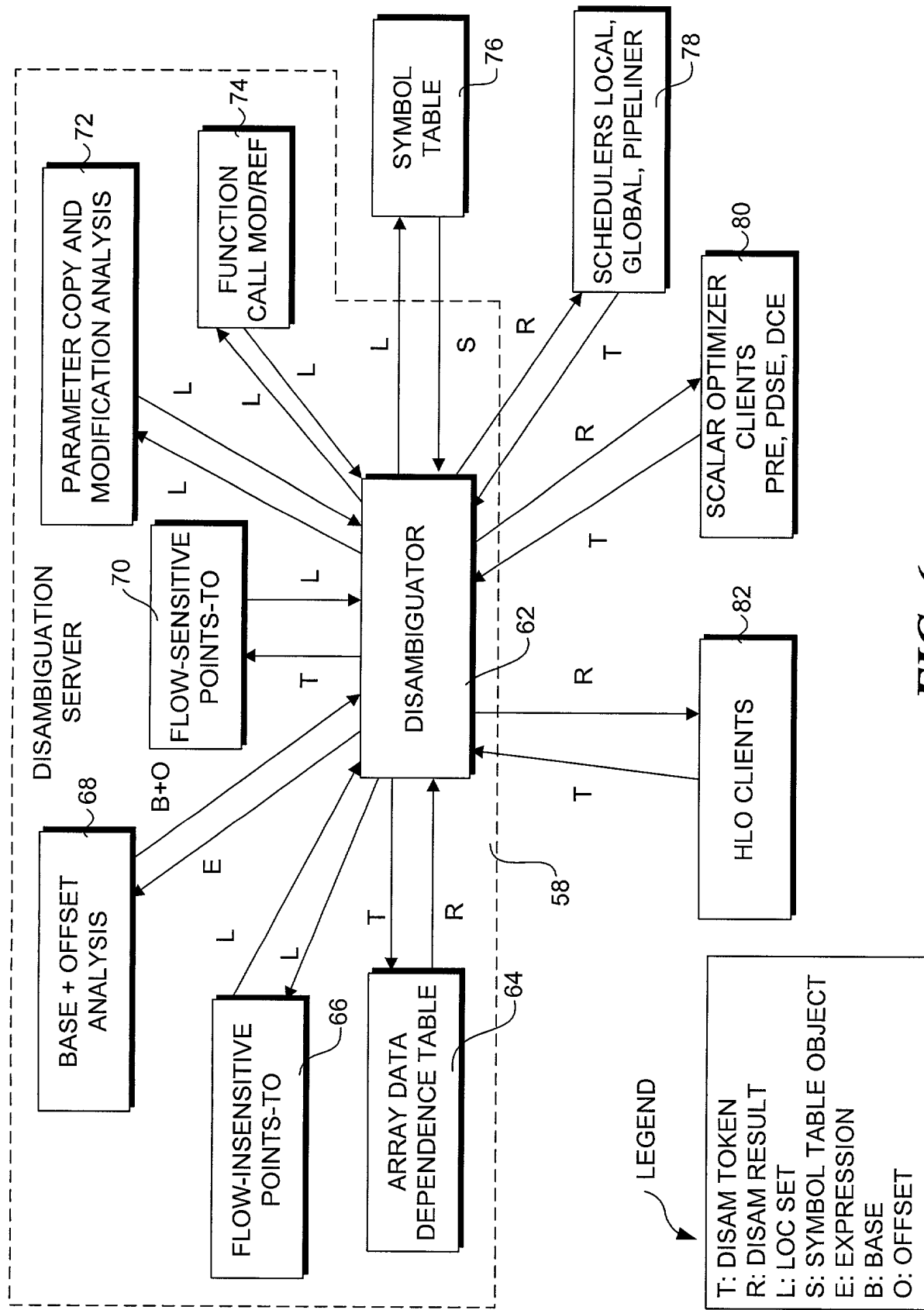
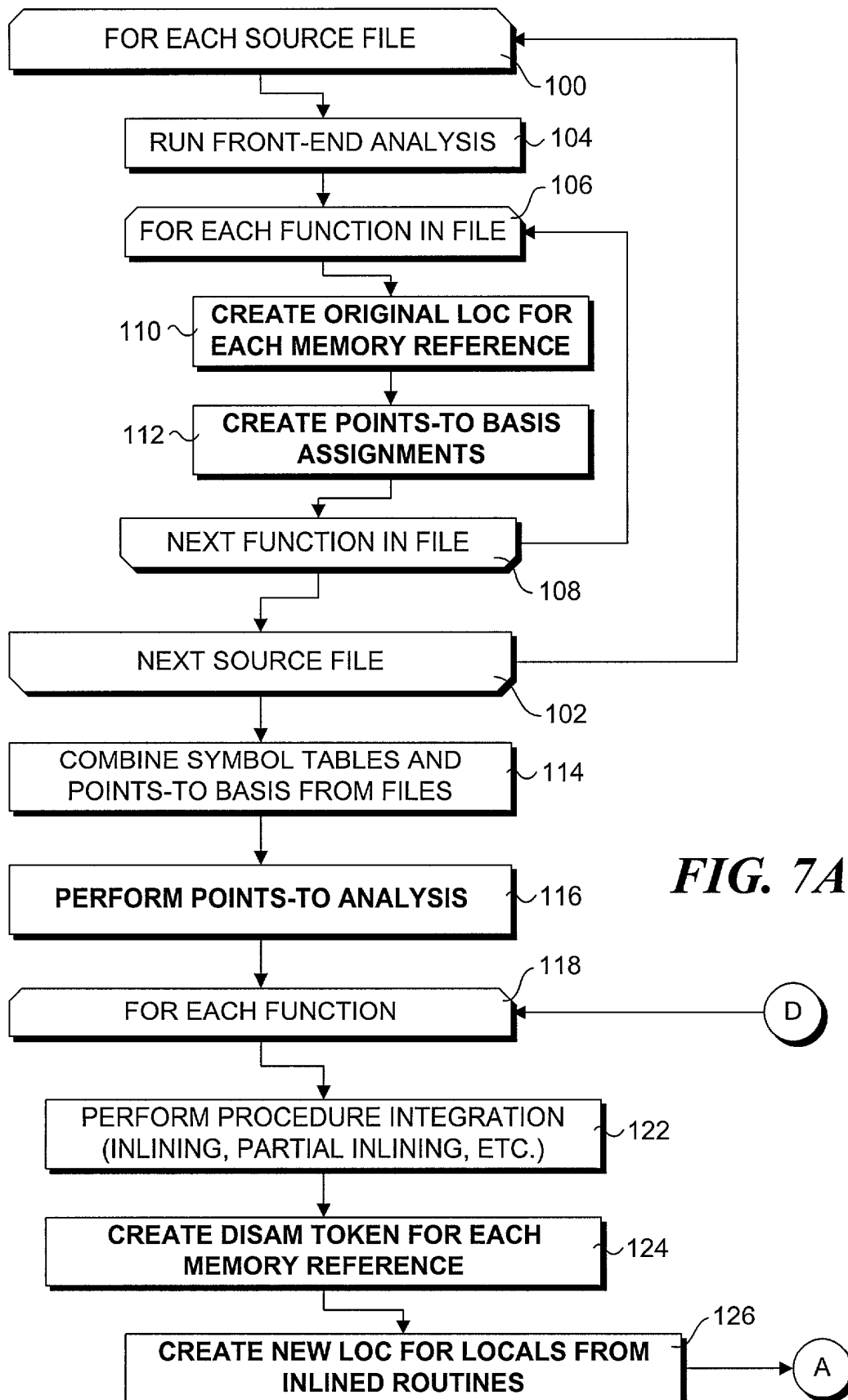
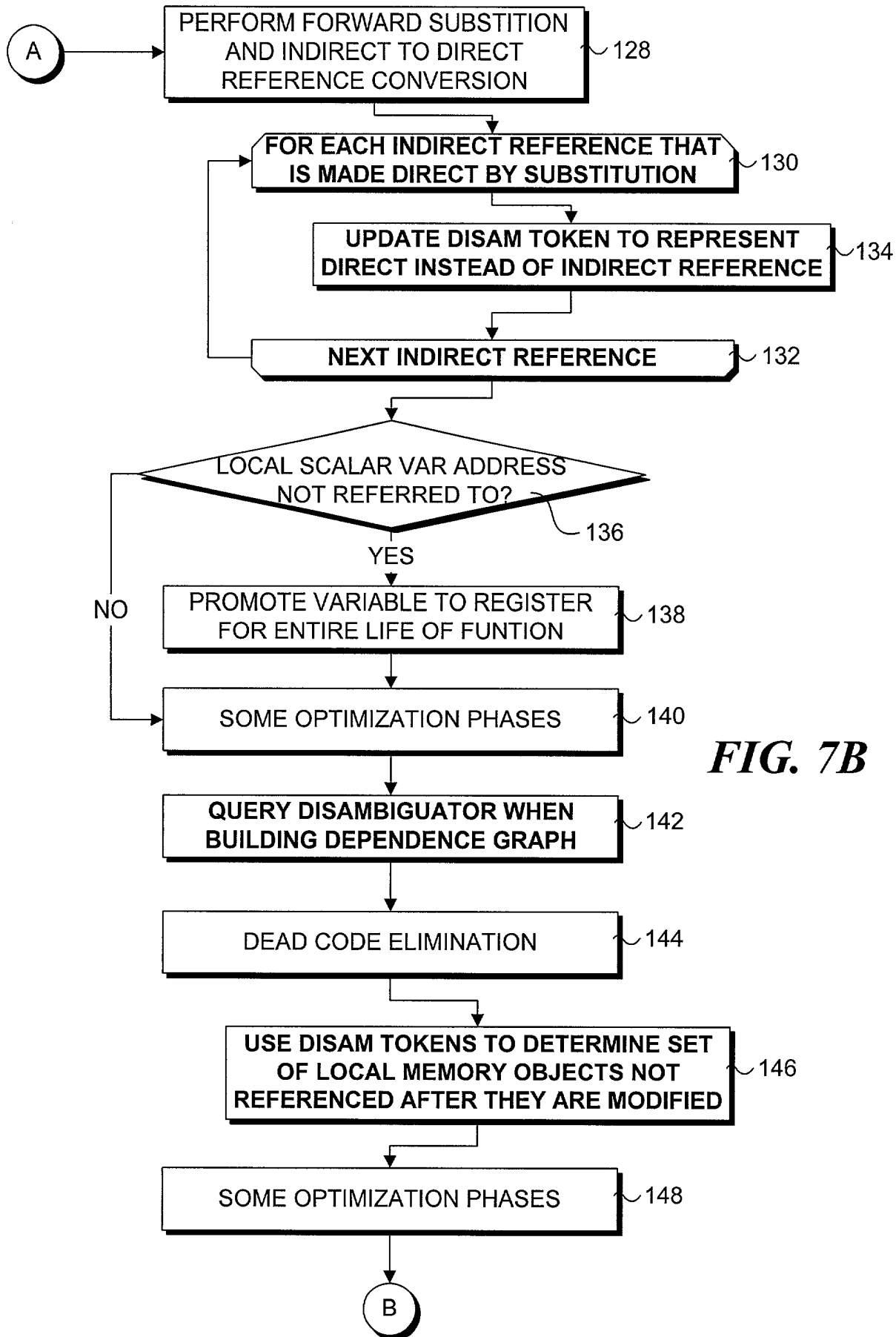
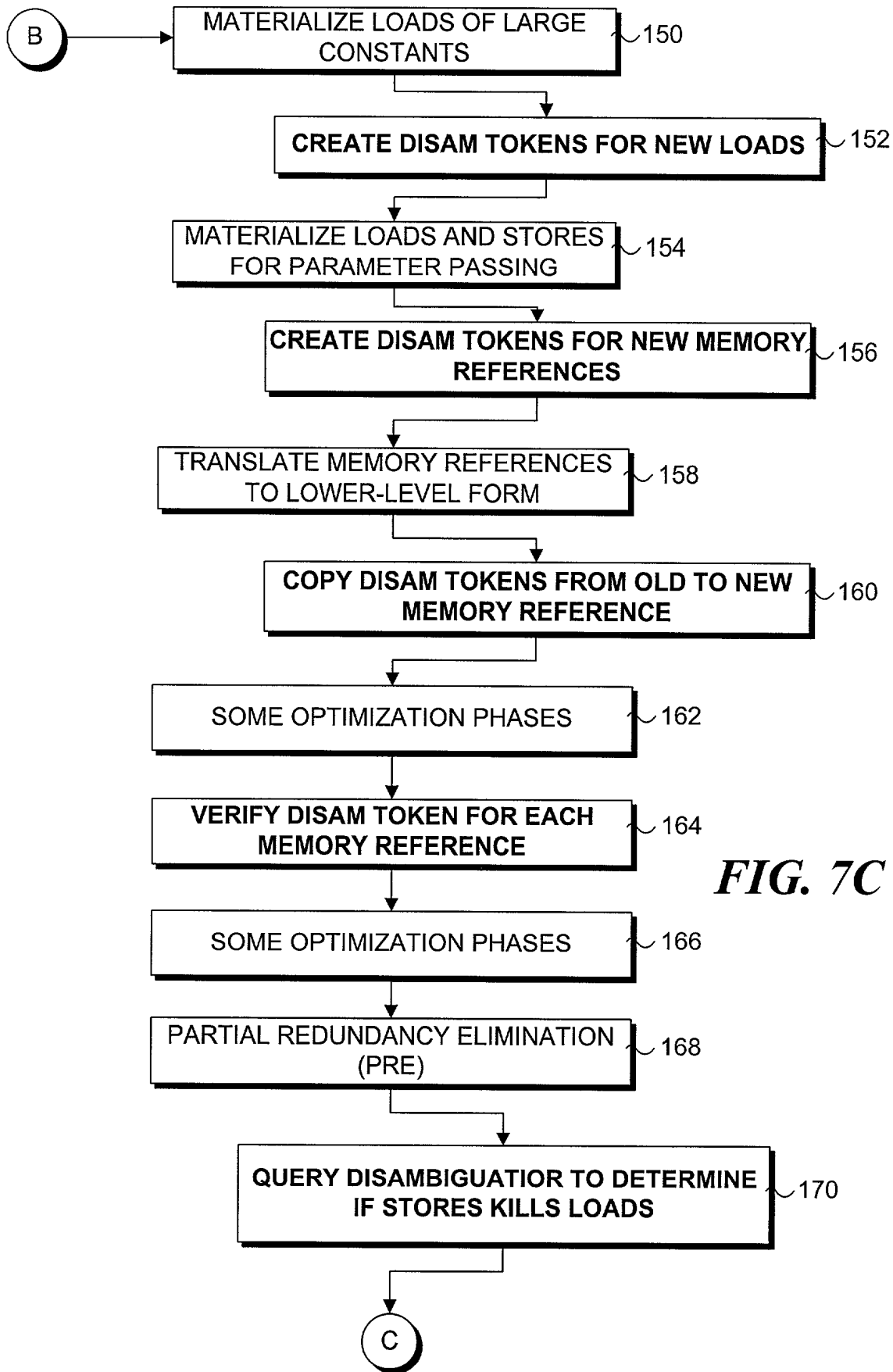


FIG. 6



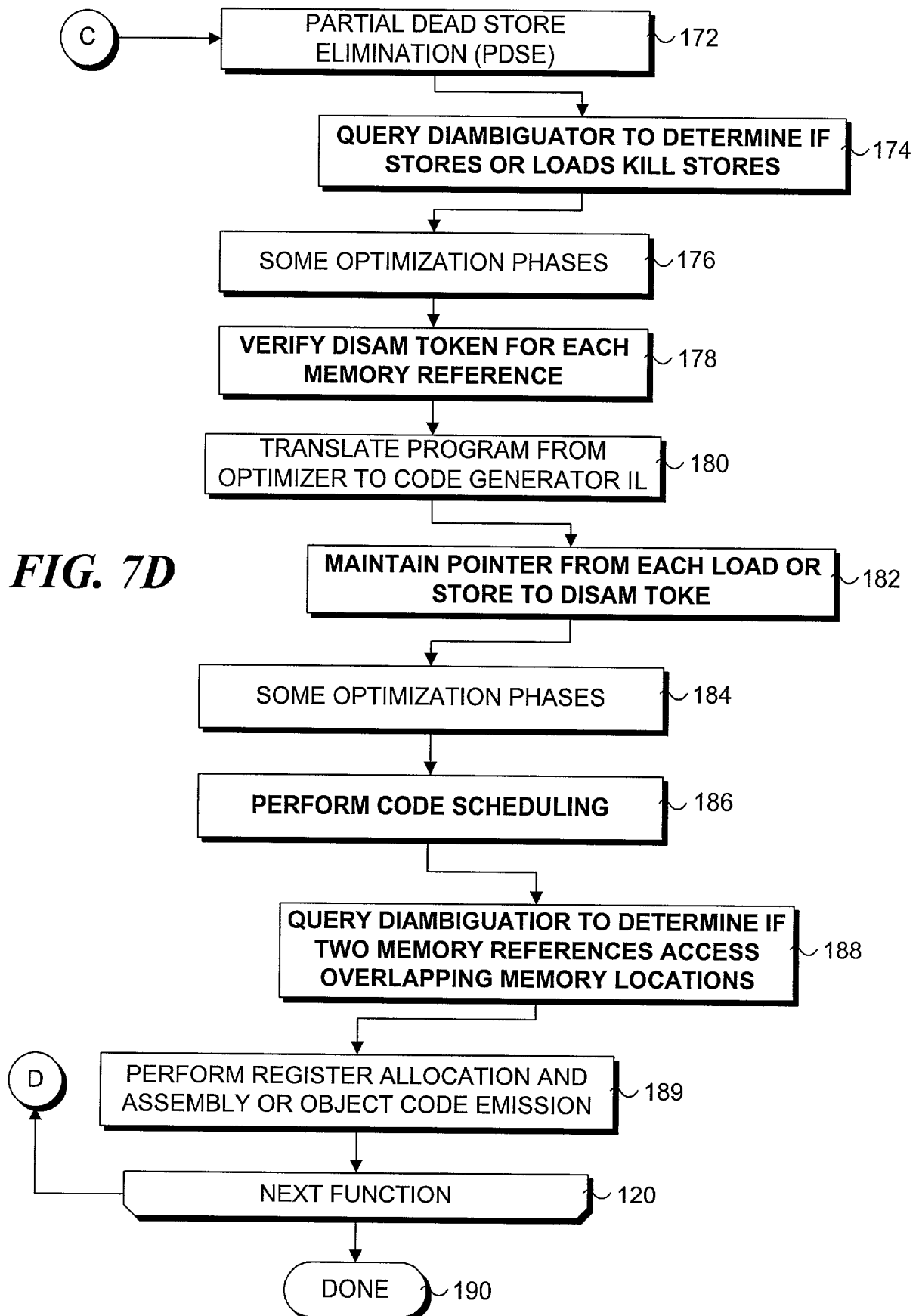


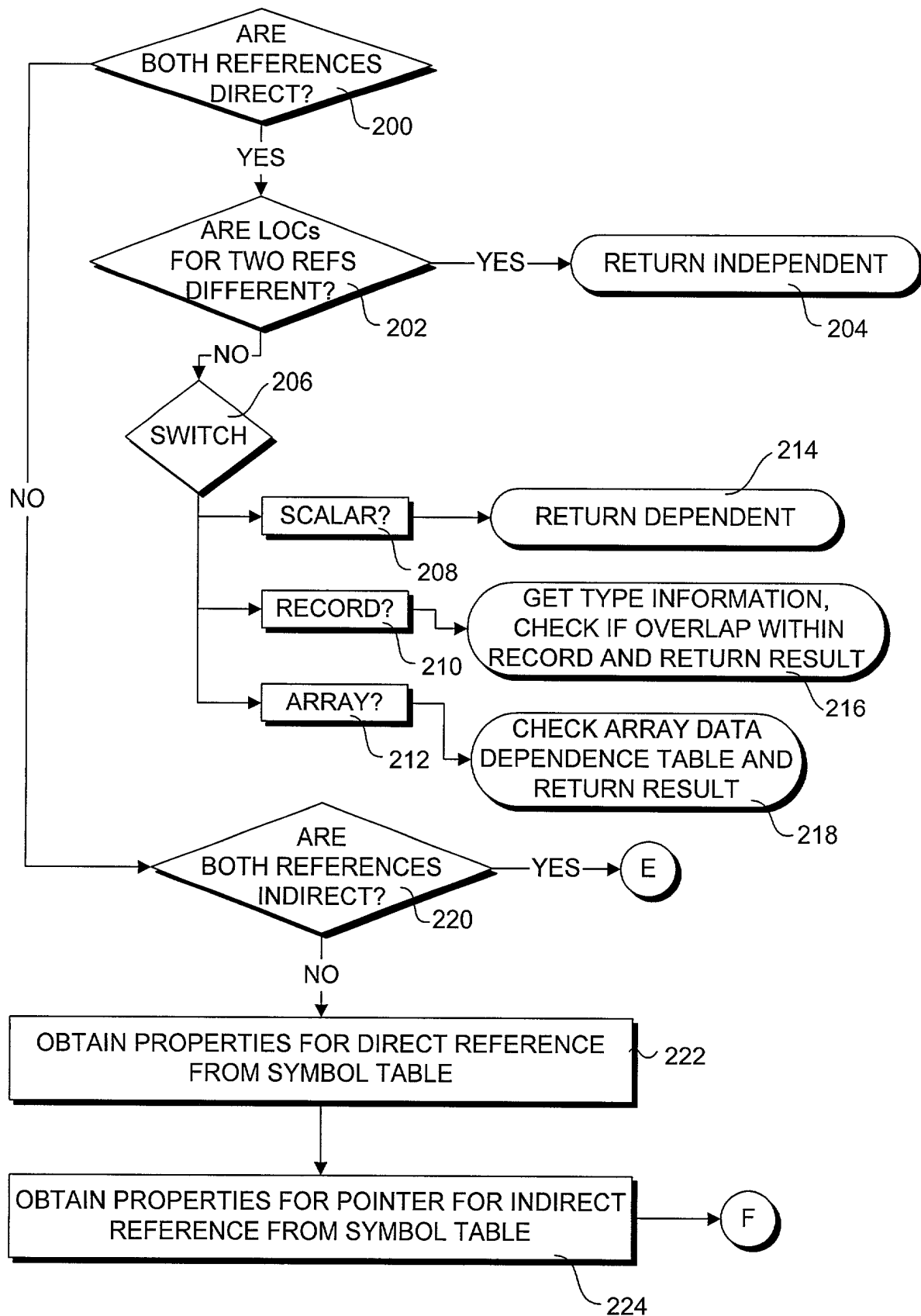
**FIG. 7B**



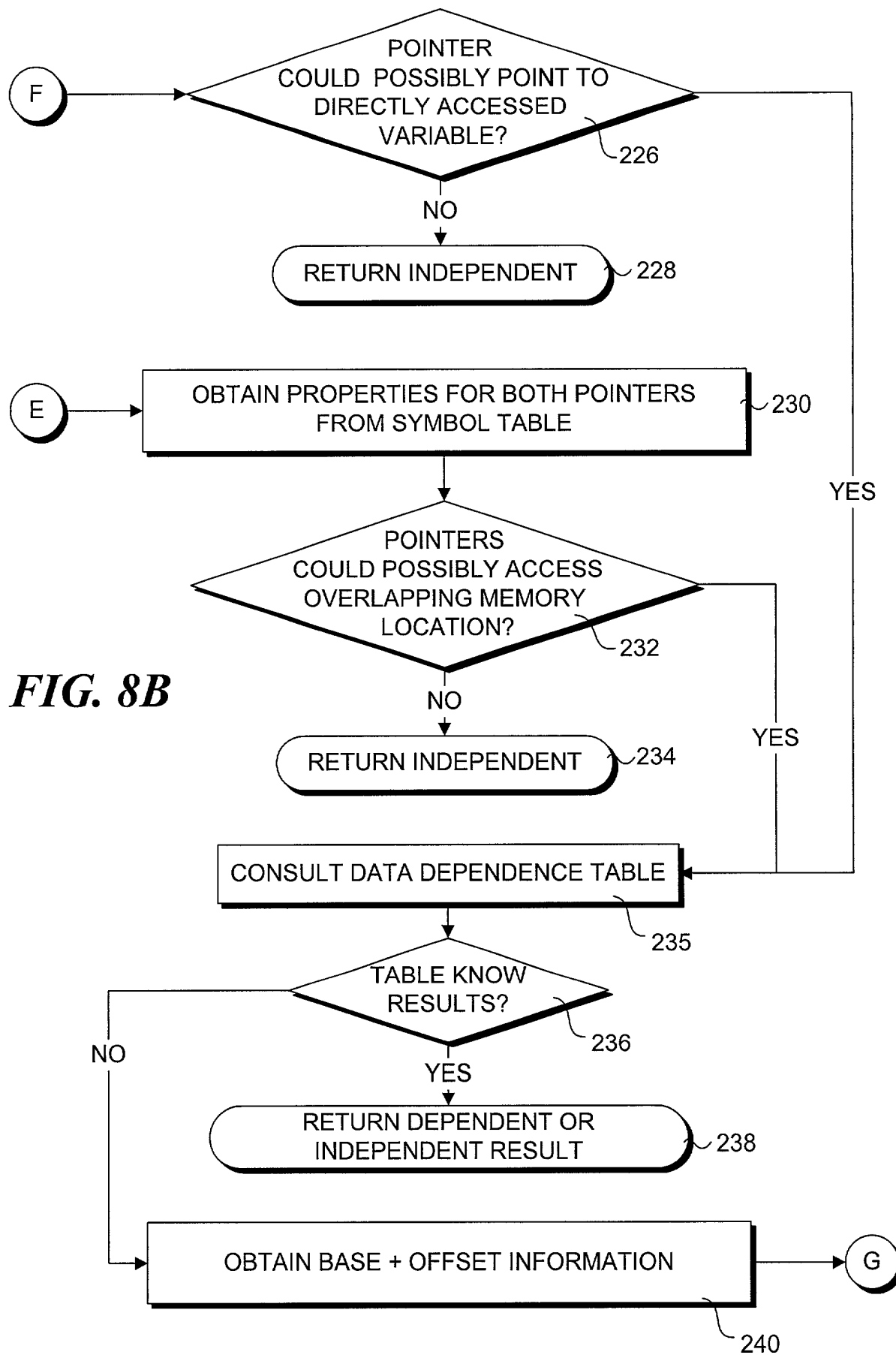
**FIG. 7C**

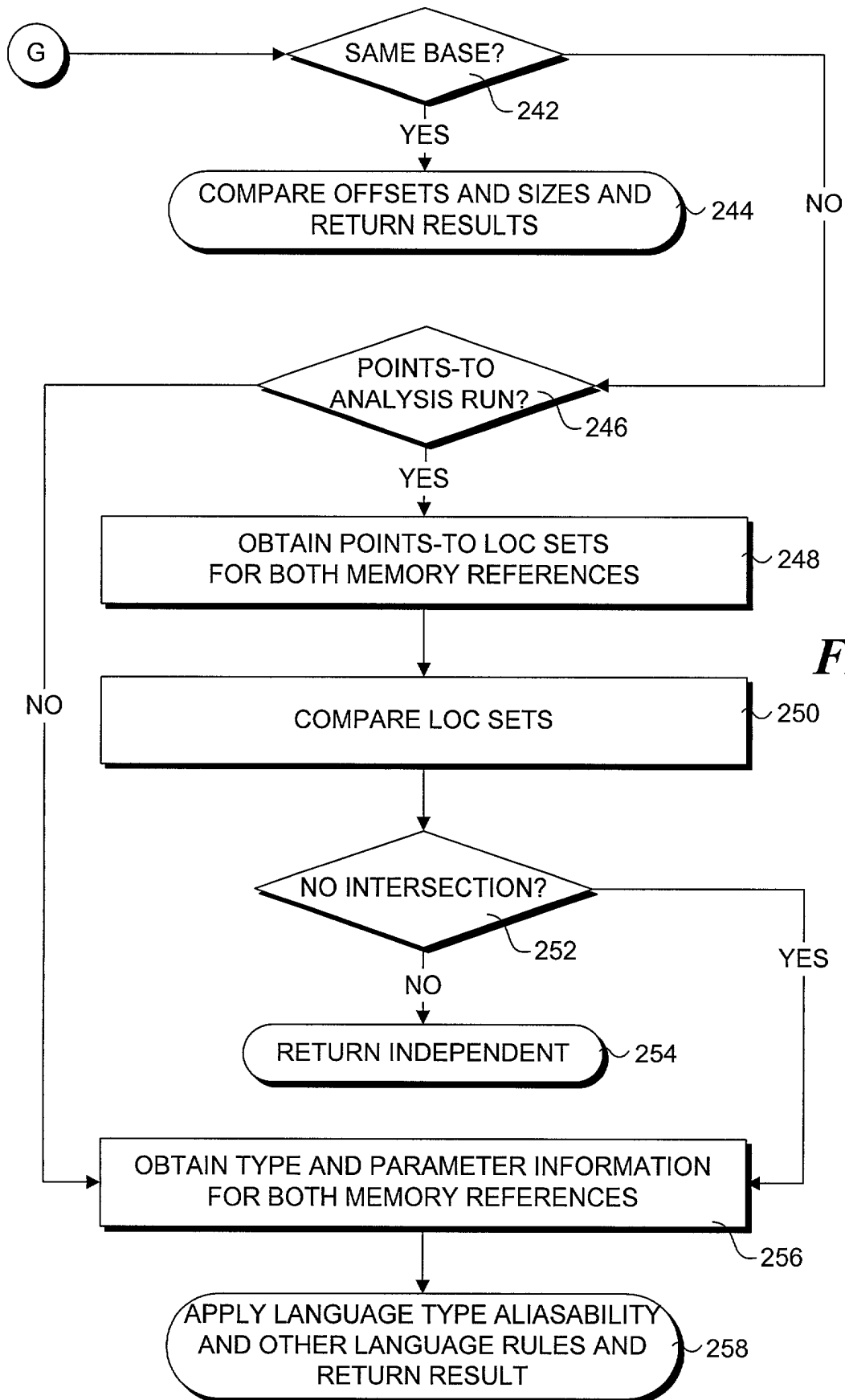


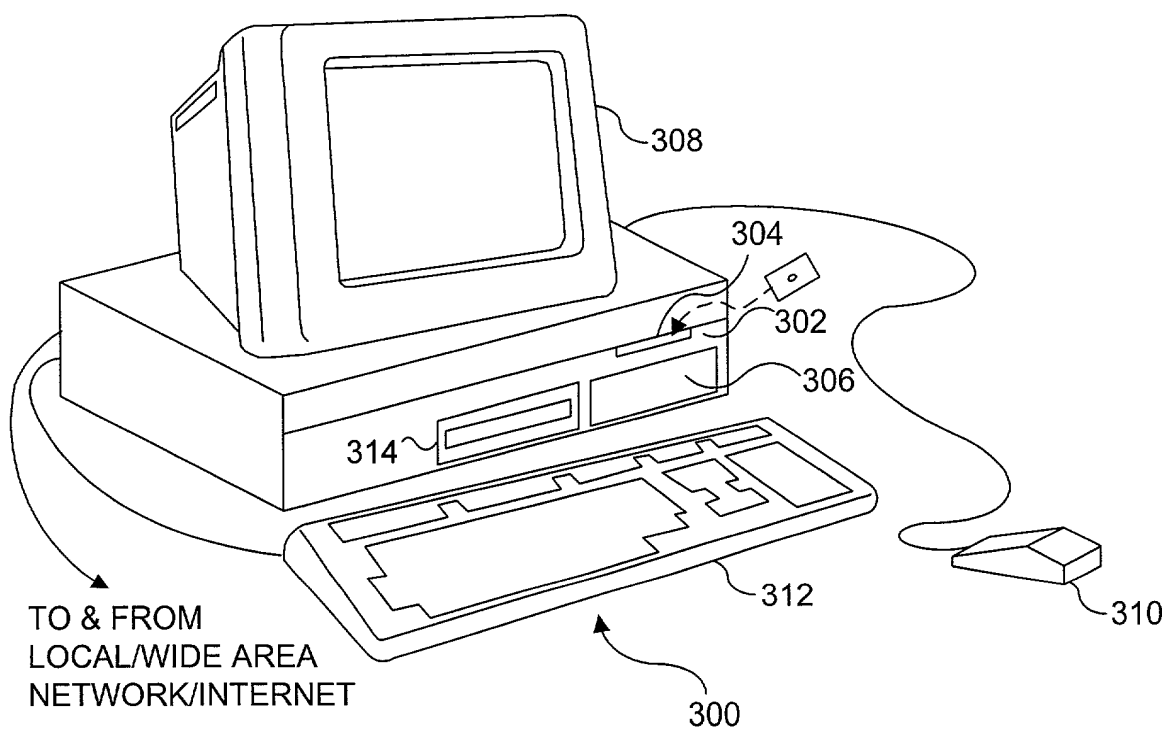




**FIG. 8A**







**FIG. 9**